

## CLAIMS

What we claim as our invention is:

1 A continuous flow, psychrophilic anaerobic digester, micro-filtration, integrated aquaculture waste treatment system comprised of:

- a. an anaerobic digester to capture waste, fitted with augers to mix digested slurry with waste stream.
- b. valves to control the flow of effluent to allow sludge to settle before effluent is released.
- c. micro-filter to filter solids and pathogens from effluent
- d. aquatic plants for filtering of effluent

2 A system according to claim 1 where valve for effluent is closed before receiving waste stream

3 A system according to Claim 1 where waste is mixed daily with augers.

4 A system, according to Claim 1, where waste is allowed to settle at least eight hours before opening valve to allow effluent to flow out.

5 A system that converts existing manure pits, lagoons, into anaerobic digesters by covering the pit with an airtight diaphragm secured to a concrete beam, where diaphragm is kept under negative pressure for ballast.

6 A system according to Claim 5 that protects against environmental contamination by removing the danger of the diaphragm being lifted by biogasses in floodstage.

7 A system according to claim 5 where concrete beam is plumbed to receive waste , to pump off bio-gas , to provide for effluent overflow , and to remove finished slurry.

8 A system according to claim 5 where bio-gas is pumped off into storage and an emergency photovoltaic pump located on vent is used during floodstage.

9 A system of aquatic plant filtering of effluent , the system comprised of:

- a. an canal adjacent to digester
- b. canal is lined and covered with a greenhouse
- c. an overhead conveyor harvester

10 A system according to claim 9 where canal is lined to prevent ground water contamination.

11 A system according to claim 9 where nutrient rich effluent flows into 1 end of canal and purified water out other end.

12 A system according to claim 9 that removes nutrients and antibiotics by filtering with the use of aquatic plants.

13 A system according to claim 9 where greenhouse is used to prevent the spread of aquatic plants into ecosystem.

14 A system according to claim 9 where greenhouse is used to protect aquatic plants from climate.

15 A system according to claim 9 where harvester is suspended from greenhouse to harvest aquatic plants.

16 A system according to claim 9 where harvester is of a conveyor type system.

17 A system according to claim 12 where aquatic plants used as feed decreases the amount of antibiotics administered to animals.